



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.				
10/516,340	03/22/2005	Leigh Trevor Canham	2491-52	3058				
23117 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203	7590 09/10/2007		<table border="1"><tr><td colspan="2">EXAMINER</td></tr><tr><td colspan="2">SCHILLINGER, ANN M</td></tr></table>		EXAMINER		SCHILLINGER, ANN M	
EXAMINER								
SCHILLINGER, ANN M								
			<table border="1"><tr><td>ART UNIT</td><td>PAPER NUMBER</td></tr><tr><td>3738</td><td></td></tr></table>	ART UNIT	PAPER NUMBER	3738		
ART UNIT	PAPER NUMBER							
3738								
			<table border="1"><tr><td>MAIL DATE</td><td>DELIVERY MODE</td></tr><tr><td>09/10/2007</td><td>PAPER</td></tr></table>	MAIL DATE	DELIVERY MODE	09/10/2007	PAPER	
MAIL DATE	DELIVERY MODE							
09/10/2007	PAPER							

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

2

<b>Office Action Summary</b>	<b>Application No.</b> 10/516,340	<b>Applicant(s)</b> CANHAM ET AL.	
	<b>Examiner</b> Ann Schillinger	<b>Art Unit</b> 3738	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/30/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 12, 17, 18, 20-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Campbell et al. (US Pub. No. 2003/0175410). Campbell et al. discloses the following regarding claim 1: a process for preparing an orthopaedic scaffold, said process comprising forming shaped blocks of a bioactive material (paragraphs 0055, 0177) comprising silicon (paragraph 0124), treating one or more selected surfaces of said blocks such that they will adhere to a similarly treated surface of a similar block (paragraph 0124), self-assembly of a scaffold comprising two or more of said blocks under conditions in which the treated surfaces will bind together, and thereafter recovering the assembled structure (paragraph 0166).

Campbell et al. discloses the limitations of claim 2 in paragraph 0177.

Campbell et al. discloses the limitations of claim 3 in paragraphs 0003 and 0198.

Campbell et al. discloses the limitations of claim 12 in paragraph 0190.

Campbell et al. discloses the limitations of claims 17 and 18 in paragraphs 0088 and 0089.

Campbell et al. discloses the limitations of claim 20 in paragraph 0180.

Campbell et al. discloses the limitations of claim 21 in paragraph 0157.

Campbell et al. discloses the limitations of claim 22 in paragraphs 0055, 0124, and 0177.

Campbell et al. discloses the limitations of claim 23 in paragraphs 0009, 0010, 0054, and 0124.

Campbell et al. discloses the limitations of claims 24 and 26 in paragraph 0190.

Campbell et al. discloses the following regarding claim 25: a process for preparing solid object, said process comprising forming shaped blocks of a material (paragraphs 0055, 0177) comprising silicon (paragraph 0124), treating one or more selected surfaces of said blocks such that they will adhere to a similarly treated surface of a similar block (paragraph 0177), and self-assembly of a structure comprising two or more of said blocks under conditions in which the treated surfaces will bind together, and thereafter recovering the assembled structure (paragraph 0166).

Campbell et al. discloses the following regarding claim 27: a process for preparing solid object, said process comprising forming shaped blocks of a material (paragraphs 0055, 0177), treating one or more selected surfaces of said blocks such that they will adhere to a similarly

Art Unit: 3738

treated surface of a similar block (paragraph 0177), and self-assembly of a structure comprising two or more of said blocks under conditions in which the treated surfaces will form covalent chemical bonds therebetween, and thereafter recovering the assembled structure (paragraphs 0166, 0190).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Campbell et al. in view of Lamberti et al. (US Pub. No. 2003/0232198). Regarding claims 4-7 and 9, Campbell et al. discloses the invention substantially as claimed, however, Campbell et al. does not disclose using bioactive silicon. Lamberti et al. teaches using bioactive silicon in paragraphs 0040-0045 for the purpose of utilizing its ability to attach to living tissue. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use bioactive silicon in order to utilize its ability to attach to living tissue.

Regarding claims 8, 10, and 11 Campbell et al. and Lamberti et al. disclose the invention substantially as claimed, however, they do not disclose the melting points and mass ratios of claims 8, 10, and 11. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use these values, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering an optimum value or workable

Art Unit: 3738

ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233; *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Campbell et al. in view of Choi et al. (US Pub. No. 2005/0226904). Campbell et al. discloses the invention substantially as claimed, however, Campbell et al. does not disclose increasing the density of silanol groups. Choi et al. teaches this in paragraphs 0020-0027 for the purpose of inducing bone-like apatite formation. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to increase the density of silanol groups in order to induce bone-like apatite formation.

Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Campbell et al. in view of Choi et al. in further view of Lee et al. (US Pat. No. 6,033,582). Campbell et al. and Choi et al. disclose the invention substantially as claimed, however, they do not disclose exposing the device to oxygen-rich plasma. Lee et al. teaches exposing the device to oxygen-rich plasma in col. 6, lines 51 through col. 7, lines 9 and col. 12, lines 27 through col. 13, lines 65 for the purpose of increasing its reactivity. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to expose the device to oxygen-rich plasma in order to induce bone-like apatite formation.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Campbell et al. in view of O'Leary et al. (US Pat. No. 5,073,373). Campbell et al. discloses the invention substantially as claimed, however, Campbell et al. does not disclose using a starch as a coupling agent. O'Leary et al. teaches this in col. 2, lines 52 through col. 4, lines 12 for the purpose of reducing the composition's tendency to premature separate. Therefore, it would have been

Art Unit: 3738

obvious to one of ordinary skill in the art at the time the invention was made to use starches in order to reduce the composition's tendency to premature separate.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann Schillinger whose telephone number is (571) 272-6652. The examiner can normally be reached on Mon. thru Fri. 9 a.m. to 4 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Corrine McDermott can be reached on (571) 272-4754. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ann Schillinger  
August 23, 2007

*A Stewart*  
ALVIN J. STEWART  
PRIMARY EXAMINER